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AUTHOR Moore, Mary H.
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ABSTRACT

A study was conducted to explore the stability of the selected indicators of merit in relation to the explicit purposes of identifying merit schools in the Cincinnati (Ohio) Public School system Design for School Excellence Program. A school could achieve merit either based on high status in achievement, attendance, and attitude, or on gain scores on an indicator, thus making merit a realistic goal for low achieving schools. To measure the stability of status scores for each indicator, correlations between scores for the years 1986 and 1985, 1985 and 1984, and 1986 and 1984 were computed separately for elementary and secondary schools. Correlations are discussed in three groups: academic achievement (reading, mathematics, writing), attendance (student attendance, staff attendance), and attitudes (interracial understanding, discipline, teacher attitude, parent attitude, student attitude). Results showed that with the exception of writing and staff attendance, the indicators were stable enough to warrant their use in identifying merit schools. However, gain scores were not serving the purpose of providing a mechanism for low achieving schools. The negative correlations of gain scores between years showed that gain scores could not be used yearly as a way for low achieving schools to obtain merit. Furthermore, the status score to gain score correlations for the elementary schools indicated that gain scores were not specifically assisting those schools with low status scores. (KSA)

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EVERYONE KNOWS YOUR BEST SCHOOLS--OR DO THEY?

Mary H. Moore
Cincinnati Public Schools

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EVERYONE KNOWS YOUR BEST SCHOOLS—OR DO THEY?

The identification of merit schools is related to the "school effects" and "effective schools" research efforts. A major portion of this research has been directed toward the identification of merit schools in large urban areas with the purpose of either providing recognition for merit schools or determining what makes the identified merit schools successful.

A concern in the identification of effective or merit schools has been stability. In order for school effectiveness to have meaning, the effectiveness needs to be stable. It is assumed that effective schools continue to be effective for at least a few years -- effectiveness is not a one-year phenomenon. Good and Brophy (1986) compare the payoff of identifying effective schools on a one-year basis to identifying a football team that is outstanding one year and wins a championship, then studying the team intensively the following year (e.g., policies related to scouting, drafting, training) only to find that the team did not even make the playoffs during the year when the observational measures were collected.

In a review of the literature on the stability of school effectiveness, Good and Brophy (1986) note that "Available evidence does not provide generalizable information about the stability of school effects." Several studies indicate that school effectiveness is not stable. In studying the average stability of school effects on student achievement, Rowan and Denk (1982) estimate that only 10% of the schools drawn from a large sample were consistently effective or ineffective (i.e., in the top or bottom quartile of the residual distribution over consecutive years), and only 5% were effective or ineffective over three consecutive years.

In a study of 810 classes of sixth graders, Rowan and Denk (1982) found correlations between gains for consecutive years was -.45. They interpreted the low correlations as being biased against schools serving low SES populations, and noted that decreases were correlated with changes in the socioeconomic composition of these schools' student bodies. Although the stability of school effectiveness varies according to the procedure used to estimate stability, the average stability of school effects on student achievement is low (Forsythe, 1973; Jencks et.al., 1972).

The stability of school effects for effective schools may be more stable than for other schools. Rutter et.al. (1979) found that schools that were effective (achievement, attendance, behavior) maintained their effectiveness over several consecutive years. There is also some support for the stability of two measures of effectiveness--Reynolds, Jones, and St. Leger (1976) found a correlation of .85 for school attendance rates over seven years, and of .56 for academic attainment over the same period.

The Problem

For the past three years, Cincinnati Public Schools has identified merit schools. The stability of merit status is, of course, dependent upon the stability of the indicators or measures of merit. The ten indicators of merit for Cincinnati Public Schools are: reading, mathematics, writing, student attendance, staff attendance, interracial understanding, discipline, teacher attitude, parent attitude, and student attitude.

The intent of this paper is to study the stability of the selected indicators of merit in relation to the explicit purposes of identifying merit schools.

Specifically, the purpose of identifying merit schools was twofold: first, to give recognition to merit schools, and second, to inspire and motivate schools to become merit schools.

Because of the twofold purpose, two methods of achieving merit on all indicators were devised. First, a school could achieve merit on its score (referred to as a status score) on an indicator; it is reasonable to designate a school a merit school based on high status scores in achievement, attendance, and attitude. However, with the wide range of socioeconomic and achievement levels in schools in the district, many schools were thought to be at an insurmountable disadvantage, particularly on the achievement indicators. Therefore the second method of achieving merit, gain scores on an indicator, was devised to make merit a realistic goal for low achieving schools. A detailed explanation of the computation of status and gain scores on indicators and decision rules on selection of merit schools are contained in a paper presented earlier in this symposium, Identifying Merit Schools Using Community-Based Indicators, (Gastright, 1987).

Considering stability of indicators and the proposes of recognizing merit schools raises four questions.

The first two are related to the status scores.

1. Are the status scores on the indicators stable enough over consecutive years to have meaning in the identification of merit schools?
2. To what extent are the indicators interrelated?

The second two questions are related to the gain scores.

3. Is there a relationship between the status score and the gain score on an indicator?
4. If gains are made one year, to what extent are gains continued to be made?

Results

Stability of Status Scores

To measure the stability of status scores for each indicator, correlations between scores for consecutive years (1986 and 1985, 1985 and 1984) and 1986 and 1984 were computed separately for elementary schools and secondary schools.

The correlations are discussed in three groups: academic achievement (reading, mathematics, writing), attendance (student attendance, staff attendance), and attitudes (interracial understanding, discipline, teacher attitude, parent attitude, student attitude).

Elementary schools. Not surprisingly, correlations were highest for the status scores in the two academic indicators measured by a standardized achievement test. Both reading and mathematics were stable indicators based on consecutive year correlations, for reading, .92 and .93, and for mathematics .84 and .92 . Mean correlations for the three comparisons were .91 for reading and .88 for mathematics. The writing test was of the "home-grown" variety and was completely rewritten between 1985 and 1986 so the lower correlations for writing are to be expected, particularly between 1986 and each of the previous years. See Table 1.

Table 1. Correlations of Status Scores on Indicators Between Years, Elementary

Indicator	1986-85	1985-84	1986-84	$\bar{X}$ 1986-85 & 1985-84
Reading	.92**	.93**	.87**	.92
Mathematics	.84**	.92**	.83**	.88
Writing Mastery	.27	.74**	.18	.50
Student Attendance	.46**	.62**	.37*	.54
Staff Attendance	.11	.01	.29	.06
Interracial Understanding	.67**	.74**	.57**	.71
Discipline	.65**	.74**	.63**	.69
Teacher Attitude	.63**	.44**	.40*	.53
Parent Attitude	.69**	.67**	.62**	.68
Student Attitude	.37*	.51**	.24	.44

* $p < .01$. ** $p < .001$.

Student attendance consecutive-year correlations were significant at the .01 level (.46 and .62). Staff attendance consecutive-year correlations were not significant. Of the ten indicators, staff attendance, which includes the attendance of all school personnel, showed the lowest between-year correlations. The method of computing staff attendance was changed in 1986--long term absences were not included. Possibly this change will improve the stability of the indicator.

All status scores for attitude indicators were stable. Mean correlations for consecutive-year comparisons were: interracial understanding, .71; discipline, .69; teacher attitude, .53; parent attitude, .68; and student attitude, .44. Student attitude was the least stable of the attitude indicators. (The six primary schools were not included in the student attitude indicator since the student attitude survey is not administered to primary children.)

Secondary schools. As in elementary schools, the highest between-year correlations were for reading and mathematics: consecutive-year correlations for reading were .98 and .96, for mathematics, .97 and .96. The correlations for the writing scores were lower for the comparisons involving the 1986 revised test. See Table 2.

All between-year correlations for student attendance were significant at the .01 level. Correlations for staff attendance were higher for the 1985-84 comparison but were not significant.

All correlations for three of the attitude indicators-- interracial understanding, discipline, and student attitude--were significant at the .01 level. Consecutive-year correlations for both parent and teacher attitude were significant for only one of the two years.

Table 2. Correlations of Status Scores on Indicators Between Years, Secondary

Indicator	1986-85	1985-84	1986-84	$\bar{X}$ 1986-85 & 1985-84
Reading	.98**	.96**	.97**	.97
Mathematics	.97**	.96**	.94**	.97
Writing Mastery	.43	.92**	.39	.67
Student Attendance	.69*	.85**	.67*	.77
Staff Attendance	-.08	.49	.04	.20
Interracial Understanding	.71**	.89**	.74**	.80
Discipline	.60*	.87**	.53*	.74
Teacher Attitude	.39	.80**	.29	.59
Parent Attitude	.74**	.41	.28	.57
Student Attitude	.80**	.73**	.68**	.77

* $p < .01$. ** $p < .001$.

Summary. Status scores on reading, mathematics, student attendance, interracial understanding, discipline and student attitude were stable for both elementary and secondary schools. Student attitude was more stable for secondary than elementary schools. Status scores on teacher attitude and parent attitude were stable for elementary schools and marginally stable for secondary schools. Staff attendance was an unstable indicator for both elementary and secondary schools. Stability of the 1986 revised method of computing staff attendance and the revised writing test cannot be determined.

It should be noted that the attitude indicators--interracial understanding, discipline, teacher attitude, parent attitude, student attitude--have been considered suspect by many in the school district since the attitude surveys are administered by teachers to students, by principals to teachers, and parent surveys are first collected by teachers. The stability of the attitude indicators supports the credibility of the attitude surveys and the feasibility of using attitude measures as indicators.

Relationships Among Status Scores

When the stability of the status scores on eight of the ten indicators was found to be quite high, the question became, how interrelated are the indicators? On the one hand it would be expected that indicators of merit schools would be interrelated. A good school does many things well. An opposing viewpoint of interrelated indicators is that the same one or two underlying indicators are being measured several times. The correlations among the status scores on the indicators which answer only the questions of the extent of interrelatedness are shown in Tables 3 through 6 for elementary and secondary schools.

Elementary schools. For 1986, all status-to-status score correlations for a cluster of seven of the ten indicators were significant at the .01 level: reading, mathematics, student attendance, interracial understanding, discipline, teacher attitude, and parent attitude. See Table 3.

Table 3. Status-to-Status Score Correlations, Elementary Schools, 1986 (N=57).

	Reading	Math	Writing Mastery	Student Attend.	Staff Attend.	Interracial Understand.	Discipline	Teacher Attitude	Parent Attitude	Student Attitude
Reading	1.00	.88**	.38*	.66**	-.07	.60**	.72**	.36*	.66**	.01
Math	.88**	1.00	.40*	.62**	.01	.58**	.68**	.43**	.62**	.04
Writing Mastery	.38*	.40*	1.00	.29	.00	.18	.29	.02	.31	.00
Student Attendance	.66**	.62**	.29	1.00	.24	.51**	.55**	.31*	.51**	.01
Staff Attendance	-.07	.01	.00	.24	1.00	.05	.01	.08	.08	.09
Interracial Understanding	.60**	.58**	.18	.51**	.05	1.00	.79**	.54**	.72**	.17
Discipline	.72**	.68**	.29	.55**	.01	.79**	1.00	.65**	.75**	.36*
Teacher Attitude	.36*	.43**	.02	.31*	.08	.54**	.65**	1.00	.42**	.38
Parent Attitude	.66**	.62**	.31	.51**	.08	.72**	.75**	.42**	1.00	.12
Student Attitude	.01	.04	.00	.01	.09	.17	.36*	.38*	.12	1.00

* $p < .01$. ** $p < .001$.

Of the three remaining indicators, writing was only correlated significantly to reading and mathematics; student attitude was only significantly correlated to discipline and teacher attitude. The revised measure of staff attendance was not correlated to any other indicator. Similar correlations were found for 1984 (see Table 4).

Table 4. Status-to-Status Score Correlations, Elementary Schools, 1984.

	Reading	Math	Writing Mastery	Student Attend.	Staff Attend.	Interracial Understand.	Discipline	Teacher Attitude	Parent Attitude	Student Attitude
Reading	1.00	.92**	.46**	.62**	-.07	.32*	.60**	.41**	.58**	.04
Math	.92**	1.00	.39*	.59**	-.04	.28	.60**	.42**	.59**	.02
Writing Mastery	.46**	.39*	1.00	.18	-.05	.46**	.39*	.21	.39*	.06
Student Attendance	.62**	.59**	.18	1.00	.11	.15	.39*	.31*	.32*	-.18
Staff Attendance	-.07	-.04	-.05	.11	1.00	.18	.05	.00	.04	.08
Interracial Understanding	.32*	.28	.46**	.15	.18	1.00	.63**	.56**	.61**	.41*
Discipline	.60**	.60**	.39*	.39*	.05	.63**	1.00	.73**	.76**	.45**
Teacher Attitude	.41**	.42**	.21	.31*	.00	.56**	.73**	1.00	.56**	.27
Parent Attitude	.58**	.59**	.39*	.32*	.04	.61**	.76**	.56**	1.00	.15
Student Attitude	.04	.02	.06	-.18	.08	.41*	.45**	.27	.15	1.00

* $p < .01$. ** $p < .001$.

Secondary schools. Two clusters of significant status-to-status score correlations were shown for 1986 (see Table 5): an academic cluster which included student attendance and an attitude cluster. However, within these

clusters not all correlations within the attitude cluster were significant. Both interracial understanding and discipline status-to-status scores were correlated to parent attitude and student attitude. Student attitude was not significantly correlated to any other indicators. Staff attendance was not correlated to any other indicator.

Table 5. Status-to-Status Score Correlations, Secondary Schools, 1986 (N=19)

	Reading	Math	Writing Mastery	Student Attend.	Staff Attend.	Interracial Understand.	Discipline	Teacher Attitude	Parent Attitude	Student Attitude
Reading	1.00	.97**	.76**	.71**	.05	.39	.40	.25	.48	-.21
Math	.97**	1.00	.72**	.74**	.03	.42	.39	.29	.47	-.25
Writing Mastery	.76**	.72**	1.00	.34	-.07	.34	.20	-.01	.32	-.09
Student Attendance	.71**	.74**	.34	1.00	.17	.49	.50	.22	.51	-.07
Staff Attendance	.05	.03	-.07	.17	1.00	.44	.47	.57*	.54	.32
Interracial Understanding	.39	.42	.34	.49	.44	1.00	.84**	.34	.80**	.66**
Discipline	.40	.39	.20	.50	.47	.84**	1.00	.57*	.82**	.59*
Teacher Attitude	.25	.29	-.01	.22	.57*	.34	.57*	1.00	.55*	-.02
Parent Attitude	.49	.47	.32	.51	.54	.80**	.82**	.55*	1.00	.49
Student Attitude	-.21	-.25	-.09	-.07	.32	.66**	.59*	-.02	.49	1.00

* $p < .01$. ** $p < .001$.

The status-to-status score correlations for 1984 were similar to those of 1986 (see Table 6). Unexplainably, the old writing test was significantly correlated to all indicators except student attitude.

Table 6. Status-to-Status Score Correlations, Secondary Schools, 1984, (N=19)

	Reading	Math	Writing Mastery	Student Attend.	Staff Attend.	Interracial Understand.	Discipline	Teacher Attitude	Parent Attitude	Student Attitude
Reading	1.00	.95**	.64*	.76*	.12	.29	.12	.31	.38	-.16
Math	.95**	1.00	.67**	.75*	.15	.35	.22	.44	.41	-.14
Writing Mastery	.64*	.67**	1.00	.64*	-.06	.63*	.59*	.64*	.77**	-.10
Student Attendance	.76*	.75*	.64*	1.00	.00	.52	.39	.78**	.45	.08
Staff Attendance	.12	.15	-.06	.00	1.00	-.19	-.23	-.29	.07	-.36
Interracial Understanding	.29	.35	.62*	.52	-.19	1.00	.81**	.71**	.65*	.63*
Discipline	.12	.22	.59*	.39	-.23	.81**	1.00	.76**	.75**	.49
Teacher Attitude	.31	.44	.64*	.78**	-.29	.71**	.76**	1.00	.57*	.38
Parent Attitude	.38	.41	.77**	.45	.07	.65*	.75**	.57*	1.00	.10
Student Attitude	-.16	-.14	-.10	.08	-.36	.63*	.49	.38	.10	1.00

* $p < .01$. ** $p < .001$.

Correlations Between Status and Gain Scores

When considering both the status scores and gain scores on indicators, it is important to remember that the merit status on indicators was first presented to school principals in November 1985 using the 1984 data. Principals received both their status and gain scores on each indicator. Based on these scores, it was apparent what had to be done to either maintain or receive merit on each indicator. Although principals had received their scores on achievement and attitude measures annually for many years, the public

recognition of merit schools on the possibility of comparisons among schools made the process more competitive. Concerted efforts were made toward improving or maintaining scores on the indicators. Therefore, in contrast to 1985 and 1986, the 1984 correlations between status and gain scores might be considered as occurring more naturally. Differences in correlations for 1984 and those for the next two years are likely to be due to the efforts to improve in specific areas.

In review, the purpose of using gain scores for merit was to give low achieving schools a chance and inspiration to achieve merit status on indicators. If the status and gain scores on an indicator are highly correlated, the purpose of the merit by gain score is not served. Correlations between merit and gain scores for elementary and secondary schools respectively are shown in Tables 3 and 4.

Elementary schools. For elementary schools, in 1984 status and gain scores were significantly correlated for six of the indicators: reading, mathematics, student attendance, staff attendance, parent attitude, and student attitude. Looking across the three years, three indicators had significant status and gain correlations all three years. Remember that the method of computing staff attendance was revised for 1986, omitting long term absence. With this revision, the correlation between status and gain for staff attendance became non-significant.

After 1984 although the decreases in the correlations were fairly small, reading, mathematics, and student attendance no longer had significant correlations between status and gain scores. In contrast by 1986 all attitude indicators for status and gain scores were significantly correlated.

Secondary schools. Status and gain scores on the indicators over the three years were only significantly correlated for parent attitude in 1986.

Summary. For the elementary schools over the three year period correlations between status and gain scores changed. Correlations between

status and gain scores on mathematics, reading, and student attendance were no longer significantly correlated in 1986. The emerging pattern of correlations between status and gain on all attitude indicators appear to be higher correlations. For secondary schools, only parent attitude had a significant status and gain correlation although overall the pattern was an increase in correlations between status and gain for most indicators.

Stability of Gain Scores

If a school makes a gain on an indicator one year, how probable is a gain the following year? The stability of gain scores has importance in the merit process and the purpose of making merit status achievable by low achieving schools. Many schools are so low on achievement that although they might obtain merit status one year by their gain scores, if the gains were only maintained the ensuing status score would not be high enough for merit the following year. Therefore if merit status through gain scores is a realistic goal for more than one year, the between-year correlations for gain scores should be high. Between-year correlations for gain scores on indicators for elementary and secondary schools respectively are shown in Tables 7 and 8.

Table 7. Correlation Between Status Scores and Gain Scores on Indicators, Elementary Schools (N=58)

Indicator	1986	1985	1984	$\bar{X}$
Reading	.30	-.09	.35*	.19
Mathematics	.21	-.08	.37*	.17
Writing Mastery	--	.46	.26	--
Student Attendance	.21	.26	.37*	.28
Staff Attendance	.14	.55**	.66**	.45
Interracial Understanding	.46**	-.01	-.13	.11
Discipline	.47**	.49**	.14	.37
Teacher Attitude	.32*	.52**	.46**	.43
Parent Attitude	.38*	.41**	.36*	.38
Student Attitude	.50**	.28	.68**	.49

* $p < .01$. ** $p < .001$.

Table 8. Correlation Between Status Scores and Gain Scores on Indicators, Secondary Schools (N=19)

Indicator	1986	1985	1984	$\bar{X}$
Reading	.45	.36	.33	.38
Mathematics	.33	.39	.34	.35
Writing Mastery	--	.13	-.04	--
Student Attendance	.29	-.43	--	-.05
Staff Attendance	.37	.52	.20	.36
Interracial Understanding	.25	-.10	.00	.05
Discipline	.35	.52	-.14	.24
Teacher Attitude	.50	.30	.18	.33
Parent Attitude	.55*	.46	--	.34
Student Attitude	.15	.30	.32	.26

* $p < .01$. ** $p < .001$.

Elementary schools. Correlations of gain scores were largely negative. The consecutive-year correlations were significant for student attendance for 1985-84 (-.53) and for staff attendance for both 1986-85 and 1985-84 (-.42 and -.47) at the .01 level. Three of the five attitude indicators for one of the consecutive year comparisons: discipline, -.36 for 1986-85; teacher attitude, -.44 for 1986-85; and student attitude, -.73 for 1985-84. Consecutive-year correlations for parent attitude were significant for both comparisons: -.45 for 1986-85 and -.34 for 1985-84. No correlations between 1986 gain scores and the 1984 gain scores were significant.

Secondary schools. Correlations of gain scores tended to be negative. However, the correlation of .62 between the 1986 and 1985 reading gain scores was significant. The only other significant correlation was -.62 for student attitude gain scores for 1986 and 1984.

Summary. None of the gain score correlation for reading for elementary or secondary schools were negative, possibly reflecting the stability of the reading indicator--all reading status scores between-year correlations were

above .90. However, for elementary schools gain score correlations for consecutive years were negative and significant at the .01 level for at least one consecutive-year comparison for all attendance and attitude indicators for the elementary schools. For the secondary, negative correlations for these indicators were not as strong; only parent attitude had a significant negative correlation.

Gain scores are not stable and the negative correlations indicate that a gain one year results in a loss the next, particularly for elementary schools. As a strategy for giving low schools a chance to attain merit on an indicator, gain scores are a one-shot, one-year help, since the gain score is associated with a loss the next year, possibly resulting in a merit by gain every other year. The lower negative gain score correlations for the 1986-84 comparisons as compared to the consecutive-year correlations for elementary schools lend some support to this concern.

Conclusions

1. With the exception of writing and staff attendance, the indicators are stable enough to warrant their use in identifying merit schools.
2. Gain scores are not serving the purpose of providing a mechanism for low achieving schools. The negative correlations of gain scores between years show that gain scores cannot be used yearly as a way for low achieving schools to obtain merit. Further, the status score to gain score correlations for the elementary schools indicate that gain scores are not specifically assisting schools low on the status scores.

References

Forsythe, R. A. (1973). Some empirical results related to the stability of performance indicators in Dyer's student change model of an educational system. Journal of Educational Measurement, 10, 7-12.

Gastright, J. F. (1987, April). Identifying merit schools using a community-based definition. Paper presented at the meeting of the American Educational Research Association, Washington D.C.

Good, T. E., 7 Brophy, J. E. (1986). School effects. In M. C. Wettrock (Ed.), Handbook of research on teaching, third edition (pp. 570-602). New York: Macmillan.

Jencks, C. S., Smith, M., Ackland, H., Bane, M. J., Cohen, D., Gintis, H., Heyns, B. & Michelson, S. (1972). Inequality: A reassessment of the effect of family and schooling in America. New York: Basic Books.

Reynolds, D., Jones, D., & St. Leger, S. (1976). Schools do make a difference. New Society, 37, 223-225.

Rowan, B., & Denk, C. E. (1982). Modeling the academic performances of schools using longitudinal data: An analysis of school effectiveness measures and school and principal effects on school-level achievement. San Francisco: Far West Laboratory.

Rutter, M., Maughan, B., Mortimore, P., Ousten, J., and Smith, A. (1979). Fifteen thousand hours: Secondary schools and their effects on children. Cambridge, MA: Harvard University Press.